## Space Weather Forecast

Issued on Thursday, 31 August 2023 at 01:17 Local

**This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales**

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**Space Weather Forecast Headline: Slight chance of isolated Moderate-class flares (R1-R2 Blackouts). Slight chance of coronal hole fast wind arriving on Day 2.**

**Analysis of Space Weather Activity over past 24 hours**

**Solar Activity:** Solar activity was Low, with only minor Common-class flares in the past 24 hours. There are currently seven sunspot regions on the visible disc. Two of these are relatively large and complex but have been mostly inactive, although one of them was the source of the largest flare today. The other regions are smaller and more simple, with little change.

A filament eruption was observed near centre-disc along with a Common-class flare. This event may produce an Earth-directed CME (Coronal Mass Ejection) given its location, although awaiting further analysis. No other Earth-directed CMEs were observed leaving the sun over the last 24 hours.

**Solar Wind / Geomagnetic Activity:** Solar winds were typical of a slow regime. The solar wind was slow-ambient. The interplanetary magnetic field was weak, while its north-south component fluctuating. The results of these aforementioned parameters was a Quiet (Kp 0-2) period of geomagnetic activity.

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) was at background levels with no solar radiation storms occurring.

**Four-Day Space Weather Forecast Summary**

**Solar Activity:** The current Low solar activity is expected to continue with a chance of an isolated Moderate flare. The most likely source for this activity probably from a region located in the southeast that produced the last moderate flare.

**Solar Wind / Geomagnetic Activity:** There are no Earth-directed CMEs currently forecast. Solar winds are at Slow levels with little probable change. The next driver for solar winds looks to be a coronal hole fast wind enhancement which may bring an enhancement to slightly elevated levels into Day 2 (01 Sep).

Geomagnetic activity is most likely to remain Quiet, before potential coronal hole influence likely increases activity on Day 2 (01 Sep).

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) is forecast to persist at background levels, with just a slight chance of enhancement should any larger flares occur from the two larger sunspot regions on the visible disc.

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Met Office

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**Geomagnetic Storms:**

| Geo-Magnetic Storm Probability (Exceedance) | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Minor or Moderate | G1 to G2 | No | 1 | 10 | 5 | 1 |
| Strong | G3 | No | 1 | 1 | 1 | 1 |
| Severe | G4 | No | 1 | 1 | 1 | 1 |
| Extreme | G5 | No | 1 | 1 | 1 | 1 |

**Radio Blackouts - X Ray Flares:**

| X Ray Flares Probability | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | R1-R2 M Class | No | 20 | 20 | 20 | 20 |
| Very Active | R3 to R5 X | No | 1 | 1 | 1 | 1 |

**Solar Radiation Storms - (High Energy Protons):**

| Radiation Storms Probability (Exceedance) | Level ($cm^{-2}$ $sr^{-1}$ $s^{-1}$) | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | ≥ S1 | No | 1 | 5 | 5 | 5 |
| Very Active | ≥ S3 * | No | 1 | 1 | 1 | 1 |

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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